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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/715,288

11/17/2003

Gareth G. Hougham

YOR920030496US1

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05/04/2006

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EXAMINER

TSUKERMAN, LARISA Z

ART UNIT

PAPER NUMBER

2833

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/715,288

Applicant(s)

HOUGHAM ET AL.

Examiner

Larisa Z. Tsukerman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment dated 03/31/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6 and 8-44 is/are pending in the application.
- 4a) Of the above claim(s) 11-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8-10 and 42-44 is/are rejected.
- 7) ☒ Claim(s) 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03/31/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

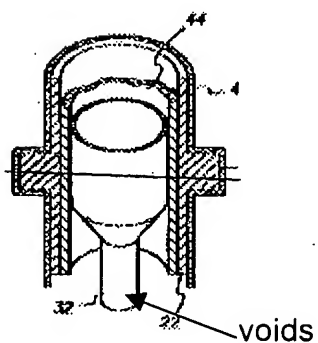
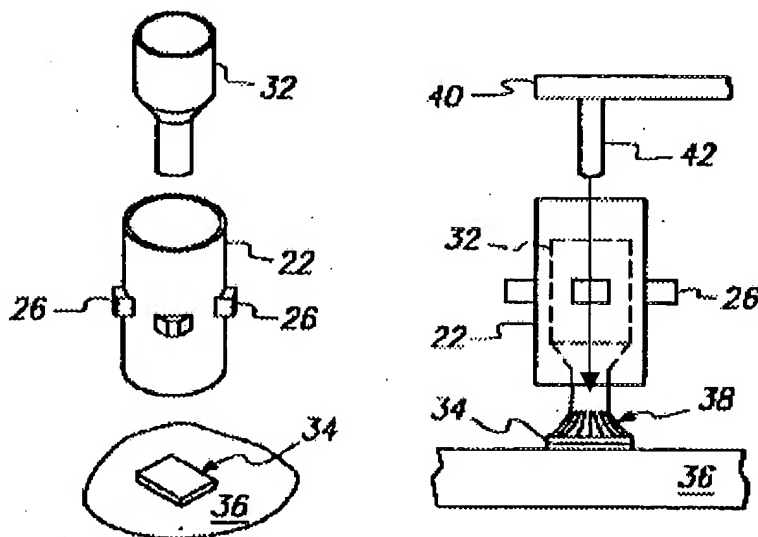
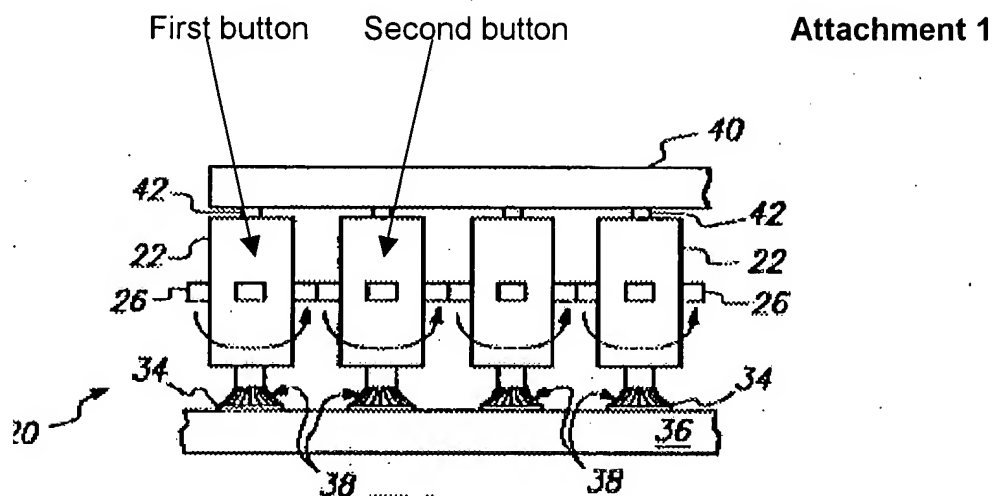
Claims 6, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuba et al. (5562462).

In regard to claim 6, Matsuba et al. disclose an interposer 20 for connecting a module 40 to a printing wiring board 36, comprising:

carrier 20/26 that has at least one electrically conductive via 22 (see Col.6, line 67 and Col.7, lines 1-3) disposed between first and second opposed surfaces (not marked) thereof and that is disposed so that the via 22 is in registration with a connector 42 of the module 40 (see Fig.4) and a connector 34 of the printed wiring board 36, and at first electrical contact button 32 (top half portion) that is hollow (see Col.6, line 17, and Figs. 4 and 7), that is disposed on the first surface in electrical contact with the via 22 (see Col.6, line 67 and Col.7, lines 1-3) for forced physical and electrical contact with the connector 42 of the module 40 and a second electrical contact button 32 (low half portion) that is hollow (see Col.6, line 17, and Figs.4-7), that is disposed on the second surface in electrical contact with the via 22 for forced physical and electrical contact with the connector 34 of the printed wiring board 36, wherein each of the first and second

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contact buttons 32 has at least one surface void V (see Col.6, line17, and Attachment 1).



In regard to claim 9, Matsuba et al. disclose the electrical contact button 32 comprises at least two surface voids (see Attachment 1) in registration with one another and disposed on opposite sides of the carrier 20,26.

In regard to claim 10, Matsuba et al. disclose the carrier 20/26 comprises a plurality of the vias 22 each in electrical contact with a different one of a plurality of the first electrical contact buttons 32 (top half portion) and with a different one of a plurality of the second electrical contact buttons 32 (low half portion).

Claims 6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Noschese (4961709)

In regard to claim 6, Noschese discloses an interposer 10 for connecting a module 12 to a printing wiring board 14, comprising:

a carrier 18 that has at least one electrically conductive via 20 disposed between first and second opposed surfaces (not marked) thereof and that is disposed so that the via 20 is in registration with a connector 16 of the module 12 (see Fig.1) and a connector 16 of the printed wiring board 14, and at first electrical contact button 22 that is hollow (Figs. 3), that is disposed on the first surface in electrical contact with the via 20 for forced physical and electrical contact with the connector 16 of the module 12 and a second electrical contact button 22 that is hollow (see Fig.3), that is disposed on the second surface in electrical contact with the via 20 for forced physical and electrical contact with the connector 16 of the printed wiring board 14, wherein each of the first

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and second contact buttons 22 has at least one surface void (not marked, area 34 in Fig.3).

In regard to claim 9, Noschese discloses the electrical contact button 22 comprises at least two surface voids (area 34 top and low part) in registration with one another and disposed on opposite sides of the carrier 18.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 - 6, 8, 10 and 42 - 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tighe et al. (5924875) in view of Patrow (4902606).

In regard to claim 6, Tighe et al. disclose an interposer 9 for connecting a module 3 to a printing wiring board 1, comprising:
a carrier 10 that has at least one electrically conductive via 14, 16 disposed between first and second opposed surfaces (not marked) thereof and that is disposed so that the via 14, 16 is in registration with a connector 13 of the module 3 (see Fig.3) and a connector 11 of the printed wiring board 1, and at first electrical contact button 15 that is hollow (see Fig. 8), that is disposed on the first surface in electrical contact with the via 14, 16 (see Fig.8) for forced physical and electrical contact with the connector 13 of the module 3 and a second electrical contact button 17 that is hollow (see Fig.8), that is

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disposed on the second surface in electrical contact with the via 14, 16 for forced physical and electrical contact with the connector 11 of the printed wiring board 1. However, Tighe et al. do not disclose that each of the first 15 and second 17 contact buttons has at least one surface void. Patrow teaches a compressive connectors 20 having an electrical contact button comprises a plurality of surface voids, to form a **spring loaded mechanical and electrical interconnection**. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include surface voids in structure of Tighe et al., as taught by Patrow, in order to **form a spring loaded mechanical and electrical interconnection**.

In regard to claim 8, Tighe et al., modified by Patrow, disclose each of the first electrical contact button 15 and the second electrical contact button 17 comprises a plurality of surface voids.

In regard to claim 10, Tighe et al., modified by Patrow, disclose the carrier 10 comprises a plurality of the vias 14, 16 **each in electrical contact** with a different one of a plurality of the first electrical contact buttons 15 and with a different one of a plurality of the second electrical contact buttons 17.

In regard to claim 43, Tighe et al. disclose an interposer 9 comprising an electrically insulating carrier 10, at least one electrically conductive via 14, 16 disposed in the carrier 10 between first and second opposed surfaces thereof (not marked), an electrically conductive contact button 15 that is hollow, that is disposed on the first surface in electrical contact with the electrically conductive via 14, 16, that covers an opening of the via in the first surface (see Fig.8). However, Tighe et al. do not disclose

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that each of the first 15 contact button has at least one surface void therein so as to accommodate forced physical contact when compressed. Patrow teaches a compressive connectors 20 having an electrical contact button comprises a plurality of surface voids, to form a **spring loaded mechanical and electrical interconnection**. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include surface voids in structure of Tighe et al., as taught by Patrow, in order to **form a spring loaded mechanical and electrical interconnection**.

In regard to claim 3, Tigh et al. disclose most of the claimed invention except for the electrical contact button 15 and 17 comprises a plurality of surface voids. However, Patrow teaches a compressive connectors 20 having an electrical contact button comprises a plurality of surface voids (see Fig.1f) to form a spring loaded mechanical and electrical interconnection. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a plurality of surface voids, at least two of which are disposed on one side of the carrier of voids in structure of Tighe et al., as taught by Patrow, in order to form a spring loaded mechanical and electrical interconnection.

In regard to claim 42, Tighe et al., modified by Patrow, disclose the plurality of voids is arranged in a birdcage pattern.

In regard to claim 44, Tighe et al. disclose the contact button 15 is a first electrically conductive contact button, and further comprising a second electrically conductive contact button 17 that is hollow, that is disposed on the second surface in electrical contact with the electrically conductive via 14, 16, that

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covers an opening of the via 14, 16 in the second surface 9 (see Fig. 8). However, Tighe et al. do not disclose that each of the second contact button 17 has at least one surface void therein so as to accommodate forced physical contact when compressed. Patrow teaches a compressive connectors 20 having an electrical contact button comprises a plurality of surface voids, to form a **spring loaded mechanical and electrical interconnection**. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include surface voids in structure of Tighe et al., as taught by Patrow, in order to **form a spring loaded mechanical and electrical interconnection**.

In regard to claim 4, Tighe et al., modified by Patrow, disclose at least two of the surface voids are in registration with one another and disposed on opposite sides of the carrier 10.

In regard to claim 5, Tighe et al., modified by Patrow, disclose the carrier 10 comprises a plurality of the electrically conductive vias 14, 16 each disposed in electrical contact with a different one of a plurality of the first electrically conductive contact buttons 15 and with a different one of plurality of the second electrically conductive buttons 17.

Allowable Subject Matter

Claim 41 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The following is a statement of reasons for the indication of allowable subject matter: The Prior Art does not teach or suggest

In regard to claim 41, that the at least one of surface voids is located to receive an optical signal so that the hollow body is capable to accommodate both optical and electrical signals in combination with other limitations of the base claim.

Response to Arguments

Applicant's arguments with respect to claim 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

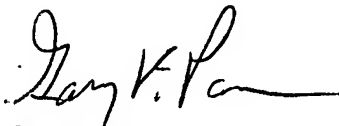
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larisa Z. Tsukerman whose telephone number is (571)-272-2015. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on (571)-272-2800 ex. 33. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LT, 04/19/2006


GARY F. PAUMES
PRIMARY EXAMINER